

REMARKS

Claim 2 is cancelled by this amendment, without prejudice or disclaimer to the subject matter contained therein. Claim 11 is newly added. Support for claim 11 may be found on page 21, lines 12-17 of the specification, for example. After the entry of this amendment, claims 1 and 3-11 will be pending in the application.

Claim Rejections - 35 USC § 102

Claims 1-10 were rejected under 35 U.S.C. § 102(e) over US Patent No. 6,719,875 to Ohmi et al. (Ohmi '875). Applicants respectfully traverse the rejection.

Claim 2 has been cancelled herein without prejudice or disclaimer to the subject matter contained therein. Therefore, the rejection of claim 2 under § 102(e) is rendered moot.

Claim 1 recites, *inter-alia*, "the front surface of said auxiliary electrode is covered by an insulating material, and the back surface of said auxiliary electrode is not covered by the insulating material."

Claim 7 recites, *inter-alia*, "the auxiliary electrode having a front surface covered with an insulating material and a back surface not covered by the insulating material."

Claim 8 recites, *inter-alia*, "the front surface of said auxiliary electrode being covered by an insulating material and the back surface of said auxiliary electrode being not covered by the insulating material such that a difference in plasma density is created between the front surface of the auxiliary electrode and the back surface of the auxiliary electrode."

Claim 9 recites, *inter-alia*, "the front surface of said auxiliary electrode is covered by an insulating material and the back surface of said auxiliary electrode is not covered by said insulating material such that a difference in plasma density is created between the front surface of the auxiliary electrode and the back surface of the auxiliary electrode."

Claim 10 recites, *inter-alia*, "the front surface of said auxiliary electrode is covered by an insulating material, and the back surface of said auxiliary electrode is not covered by the insulating material."

Ohmi '875 discloses a plasma apparatus including an auxiliary electrode. The auxiliary electrode is made of a material such as silicon carbide, tantalum or a conductive material such as aluminum or the like with an insulating material applied on the surface of auxiliary electrode (see col. 7, lines 46-53 and col. 8, lines 41-45 in Ohmi '875). According

to Ohmi '875, the insulating material is applied on substantially the "whole" surface of the auxiliary electrode.

In contrast, as recited by in claims 1 and 7-10, only the front surface of the auxiliary electrode is covered by an insulating material while the back surface of the auxiliary electrode is not covered by the insulating material. By covering the front surface of the auxiliary electrode while not covering the back surface of the auxiliary electrode, the radio frequency power supplied to the auxiliary electrode, to render a self-bias potential more uniform, is lowered. The radio frequency power can be, for example, lowered from 200W to 100W (see, for example, Figures 8 and 9 and related description on page 15 of the specification).

Ohmi '875 does not disclose, teach or even suggest covering the front surface of the auxiliary electrode by an insulating material while not covering the back surface of the auxiliary electrode by the insulating material. Consequently, Ohmi '875 does not disclose, teach or suggest each and every limitation recited by claims 1 and 7-10. As a result, Ohmi '875 cannot anticipate these claims.

Therefore, Applicants respectfully submit that claims 1 and 7-10, and claims 3-6 and 11 which depend from claim 1, are patentable. Thus, Applicants respectfully request that the rejection of claims 1-11 under § 102(e) over Ohmi '875 be withdrawn.

#### Claim Rejections - 35 USC § 103

Claim 7 was rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,232,236 to Shan et al. in view of WO 98/39500 to Ohmi et al. (Ohmi '500) Applicants respectfully traverse the rejection.

The Examiner contends that Shan et al. discloses "an auxiliary electrode," process kit 220 provided at an outer periphery of the first electrode 215. The first electrode 215 is connected to a first power source 240 and "the auxiliary electrode," process kit 220 is connected to a second source 242 to excite plasma in the vicinity of the auxiliary electrode. The radio frequency signals of the first power source and the second power source have different phases. Applicants respectfully disagrees with the Examiner's characterization of Shan et al.

Shan et al. merely discloses that the radio frequency signals of the first power source 240 and the second power source 242 may have different frequencies (see col. 5, lines 34-36 in Shan et al.). Shan et al. does not disclose, teach or suggest the radio frequency signals of

the first power source and the second power source have different phases. The fact that the first power source and the second power of Shan et al. may have different frequencies would not suggest to those skilled in the art that the first power source and the second power source have different phases.

The Examiner also contends that the first power source and the second power source will inherently possess different phases and therefore the electrons drift as claimed. Applicants respectfully disagree.

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). Based on the totality of the disclosure by Shan et al, one ordinary skill in the art would not infer that the radiofrequency signals of the first power source and the second power source of Shan et al. possess different phases.

Applicants also respectfully point out that Shan et al. does not disclose, teach or suggest that the auxiliary electrode (process kit 220) has a front surface covered with an insulating material and a back surface not covered by the insulating material. Moreover, as conceded in the Office Action, Shan et al. does not disclose, teach or suggest applying a static magnetic field to a surface of the substrate to which the plasma process is applied.

Ohmi '500 fails to overcome the deficiencies noted above in Shan et al. Ohmi '500 discloses a plasma etching device which has an auxiliary electrode and a magnetic device for applying a magnetic field to enable generation of uniform density plasma. The chuck in Ohmi '500 is supplied with a radio frequency signal (110) but the auxiliary electrode is not supplied with a radio frequency signal having a different phase than radio frequency signal (110). Consequently, Ohmi '500 does not disclose, teach or suggest supplying radio frequency signals with different phases to the first electrode and the auxiliary electrode. Furthermore, Ohmi '500 does not disclose, teach or suggest that the auxiliary electrode has a

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front surface covered with an insulating material and a back surface not covered by the insulating material.

Applicants also respectfully submit that, there is no suggestion in either Shan et al. or Ohmi '500 to combine the teachings of Shan et al. with the teachings of Ohmi '500 and apply a static magnetic to the apparatus of Ohmi '500. Furthermore, even if one were to modify the apparatus of Shan et al to include a static magnetic field, which Applicants do not concede is reasonable, one would not obtain the plasma processing method performed in a plasma processing apparatus as recited in claim 7 as the method requires supplying radio frequency signals with different phases to the first electrode and the auxiliary electrode, the auxiliary electrode having a front surface covered with an insulating material and a back surface not covered by the insulating material. Clearly, neither Shan et al. nor Ohmi '500, alone or in combination, disclose, teach or suggest supplying radio frequency signals with different phases to the first electrode and the auxiliary electrode, the auxiliary electrode having a front surface covered with an insulating material and a back surface not covered by the insulating material.

Consequently, neither Shan et al. nor Ohmi '500, alone or in combination, disclose, teach or suggest the subject matter recited in claim 7. Therefore, Applicants respectfully submit that claim 7 is patentable over Shan et al. and Ohmi '500. Reconsideration and withdrawal of the rejections based upon these references are respectfully requested.

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### CONCLUSION

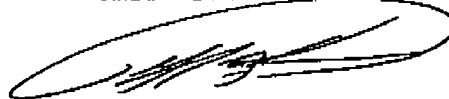
In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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